

# HOMEWORK: SET 1

## Practice Problems Factor Label Problem Solving

Name: Key

The following equalities might be necessary in some of the problems on this worksheet.

$$2.54 \text{ cm} = 1.00 \text{ in}$$

$$454 \text{ g} = 1.00 \text{ lb}$$

$$1.00 \text{ Angstrom (A}^\circ) = 1 \times 10^{-8} \text{ cm}$$

$$3 \text{ ft} = 1 \text{ yard}$$

$$12 \text{ inches} = 1 \text{ ft}$$

Please SHOW ALL WORK using the factor label method!!! Do not forget units!!!!

1. How many dimes are in 56 dollars? How many pennies? (ans. = 5600 pennies)

$$\# 56 \left( \frac{10 \text{ dimes}}{\$1} \right) \left( \frac{10 \text{ pennies}}{1 \text{ dime}} \right) = 5600 \text{ pennies} \quad 560 \text{ dimes}$$

2. How many nickels are there in 6 quarters? (ans. = 30 nickels)

$$6 \text{ Quarters} \left( \frac{5 \text{ nickels}}{1 \text{ quarter}} \right) = 30 \text{ nickels}$$

3. How many hours, minutes and seconds are in 3 weeks? (ans. = 504 hrs, 30240 min, 1814400 sec)

$$3 \text{ wks} \left( \frac{7 \text{ days}}{1 \text{ wk}} \right) \left( \frac{24 \text{ hr}}{1 \text{ day}} \right) \left( \frac{60 \text{ min}}{1 \text{ hr}} \right) \left( \frac{60 \text{ sec}}{1 \text{ min}} \right) = 1814400 \text{ sec}$$

Counting # unlimited sig figs

4. Convert 17 pounds to grams. (ans. =  $7.7 \times 10^3 \text{ g}$ )

$$17 \text{ lbs} \left( \frac{454 \text{ g}}{1 \text{ lb}} \right) = 7718 = 7700 = 7.7 \times 10^3 \text{ grams}$$

5. How many centimeters are in 254 inches? (ans. = 645 cm)

$$254 \text{ in} \left( \frac{2.54 \text{ cm}}{1 \text{ in}} \right) = 645.16 = 645 \text{ cm}$$

6. 50.0 yards contain how many feet? (ans. = 150 ft)

$$50.0 \text{ yd} \left( \frac{3 \text{ ft}}{1 \text{ yd}} \right) = 150 = 150. \text{ or } 1.50 \times 10^2 \text{ ft.}$$

7. Convert 540 mm to kilometers. (ans. =  $5.40 \times 10^{-4} \text{ km}$ )

$$540 \text{ mm} \left( \frac{1 \text{ m}}{1000 \text{ mm}} \right) \left( \frac{1 \text{ km}}{1000 \text{ m}} \right) = 5.4 \times 10^{-4} \text{ km}$$

8. How many centimeters are there in 2.0 feet? (ans. = 61 cm)

$$2.0 \text{ ft} \left( \frac{12 \text{ in}}{1 \text{ ft}} \right) \left( \frac{2.54 \text{ cm}}{1 \text{ in}} \right) = 60.96 = 61 \text{ cm}$$

9. Convert 150 feet to Angstroms. (ans. =  $4.57 \times 10^{11} \text{ A}^\circ$ )

$$150 \text{ ft} \left( \frac{12 \text{ in}}{1 \text{ ft}} \right) \left( \frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left( \frac{1 \text{ A}^\circ}{1 \times 10^{-8} \text{ cm}} \right) = 4.572 \times 10^{11} = 4.6 \times 10^{11} \text{ cm}$$